

Turning to Hsieh, the reference shows a body region formed by a single-angle implantation. From Fig. 8, this is perpendicular to the surface plane of the device. See arrows 65 and column 4, lines 5-12. After implantation, the p-type impurities are then diffused into the epitaxial layer-type 42 to form the p-type body region 64. Column 4, lines 25-33. There is absolutely no disclosure and no suggestion in Hsieh of the possibility of the blanket ion implantation of boron ions 65 being directed at two different angles to the surface plane of the device.

By contrast, the body region 64 of Hsieh relies on spacers 60 on the sides of the gate 48 to self-align the body implant from the gate edge. It then further relies on a diffusion cycle to diffuse the dopant beneath the gate. Column 4, lines 25-34. Neither of the steps is required in the present invention, further showing the differences between the two.

Han, on the other hand, discloses a MOSFET, which is an *entirely different device* to a DMOS. MOSFET devices are low voltage devices, typically operating at voltages below 5 volts, while DMOS devices are high voltage devices operating at voltages well above 5 volts and indeed up to a few hundred volts. Further, the drain and source are reversible in a MOSFET, while they are clearly not reversible in a DMOS device.

One of the most telling points is the fact that, despite the contention in the Office Action to the contrary, *Han fails to disclose the formation of a body member using two angle implantations.*

In Han, the regions identified by the reference numeral 15 are *not body members* but, rather, are source and drain regions. The region 16, which the Office Action indicates to be a body member, is primarily provided to selectively increase the doping concentration of the back gate 11 beneath the surface, to increase the voltage at which punch-through will occur. However, whether the region 16 is a body member actually is irrelevant, the reason 16 being implanted at one angle and one angle only. Han describes region 16 as being implanted at an angle greater than 0, and preferably between 5° and 75°, and phosphorus at an angle of 45°. However, the *dopant is implanted at a single angle*, and a single angle only, to form the region 16. Accordingly, Han does not disclose the formation of a body member in a drain region or any other region in which the dopant is directed at *two implantation angles*.

Contiero et al. also fails to disclose implantation of a body region at more than one implantation angle.

Thus, even if the references were combinable, which we believe they are not, the result would not be the claimed invention.

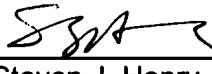
Further, secondary considerations point strongly toward unobviousness. The claimed invention has produced a major step forward in the art, notwithstanding its apparent simplicity, since it permits the formation of DMOS devices using conventional CMOS processes, and permits the formation of DMOS devices simultaneously with other CMOS devices.

Moreover, the method according to the invention, including steps or acts A and B of claim 1 permits the drain/source threshold voltage of a DMOS device to be determined independently of the punch-through breakdown voltage of the device and, indeed, independently of the avalanche breakdown voltage. Consequently, the method of the claimed invention significantly reduces the time and cost of production of integrated circuit chips which include combinations of CMOS and DMOS devices. This advantage is discussed in the specification at page 8, lines 2-12; other corresponding problems of prior art methods are discussed in the specification at page 1, line 10 - page 3, line 10.

Despite the existence of the prior art for over 4 years, which in the semiconductor industry is a significant time period, no one made the claimed invention. This substantial time period coupled with the great advantages of the invention is powerful evidence of unobviousness and is in no way diluted by the simplicity of the invention.

For the foregoing reasons, reconsideration and withdrawal of the rejection are now requested.

Respectfully submitted,



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